REPORT DOCUMENTATION PAGE

Form Approved OMB NO. 0704-0188

1. REPORT DATE (DD-MM-YYYY)	2. REPORT TYPE	3. DATES COVERED (From - To)
22-08-2018	Final Report	16-Mar-2018 - 15-Jul-2018

4. TITLE AND SUBTITLE
Final Report: 2018 Noble Metal Nanoparticles Gordon Research Conference & Seminar

5a. CONTRACT NUMBER
W911NF-18-1-0105

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER
611102

6. AUTHORS

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAMES AND ADDRESSES
Gordon Research Conferences, Inc.
512 Liberty Lane

West Kingston, RI 02892 -1502

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS (ES)
U.S. Army Research Office
P.O. Box 12211
Research Triangle Park, NC 27709-2211

10. SPONSOR/MONITOR'S ACRONYM(S)
ARO

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
73083-CH-CF.1

12. DISTRIBUTION AVAILIBILITY STATEMENT
Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES
The views, opinions and/or findings contained in this report are those of the author(s) and should not contrued as an official Department of the Army position, policy or decision, unless so designated by other documentation.

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	15. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Stephan Link
UU	UU	UU	UU		19b. TELEPHONE NUMBER 713-348-4561

RPPR Final Report
as of 01-Nov-2018

Agency Code:

Proposal Number: 73083CHCF **Agreement Number: W911NF-18-1-0105**
INVESTIGATOR(S):

Name: PhD Stephan Link
Email: slink@rice.edu
Phone Number: 7133484561
Principal: Y

Organization: **Gordon Research Conferences, Inc.**
Address: 512 Liberty Lane, West Kingston, RI 028921502
Country: USA
DUNS Number: 075712877 EIN: 050300482
Report Date: 15-Oct-2018 Date Received: 22-Aug-2018
Final Report for Period Beginning 16-Mar-2018 and Ending 15-Jul-2018
Title: 2018 Noble Metal Nanoparticles Gordon Research Conference & Seminar
Begin Performance Period: 16-Mar-2018 **End Performance Period:** 15-Jul-2018
Report Term: 0-Other
Submitted By: Nancy Ryan Gray Email: grants@grc.org
Phone: (401) 360-1505
Distribution Statement: 1-Approved for public release; distribution is unlimited.

STEM Degrees: **STEM Participants:**

Major Goals: Organizing a Gordon Research Conference involves extensive communication with the research community to identify important issues at the frontiers of the field, and solicit suggestions for speakers and discussion leaders to participate in the conference. The Chair then contacts prospective participants to invite them to talk and discuss the nature of their contributions. The Chair then communicates the topics and aims of the conference through web pages, contact with relevant international professional bodies and email to members of the research community around the world to encourage applications for participation in the conference. The Chair is then responsible for assessing and accepting the applications and fielding a host of questions both concerning the technical content and practical aspects of conference participation.

Accomplishments: The 2018 Gordon Research Conference on Noble Metal Nanoparticles hosted the same invigorating level of cutting-edge science and technology that had made the previous four Noble Metal Nanoparticles conferences so successful. Speakers and Discussion Leaders were drawn from a complementary mix of experimentalists and theoreticians over a wide range of fields, including chemistry, physics, materials science, electrical engineering, and more. Oral presentations and poster sessions invoked lively discussions that cut across several disciplines and included participants from diverse backgrounds. Research topics featured the synthesis and assembly of metallic nanoparticles including hybrid and non-noble metal nanostructures that support collective excitations, the theoretical understanding of surface plasmons and their interactions with light, electrons, molecules, and other nanostructures, and applications that range from photocatalysis to nanomechanics and nanomedicine. At the conclusion of the Conference, selected poster presenters were invited to give short talks to showcase their work. Outside of planned events, attendees had many opportunities for informal gatherings in the afternoons and evenings to build networks and spur new research ideas. Young scientists were highly encouraged to participate in this Conference as well as the related Gordon Research Seminar (GRS) on Noble Metal Nanoparticles. As always, a great emphasis was placed on unpublished, novel, and exciting results. This was a vibrant and stimulating atmosphere for furthering new and impactful research for noble metal nanoparticles and other nanostructures including hybrid materials and assembled superstructures, which all have in common that they support the excitation of surface plasmon resonances.

Training Opportunities: Speakers, discussion leaders, poster presenters and attendees simultaneously contributed to and benefited from the collective skills and experience shared throughout the conference.

Results Dissemination: The final conference program has been posted on the GRC web site.

RPPR Final Report
as of 01-Nov-2018

Honors and Awards: Nothing to Report

Protocol Activity Status:

Technology Transfer: Nothing to Report

GORDON RESEARCH CONFERENCES

FINAL PROGRESS REPORT
Army Research Office
Noble Metal Nanoparticles GRC/GRS

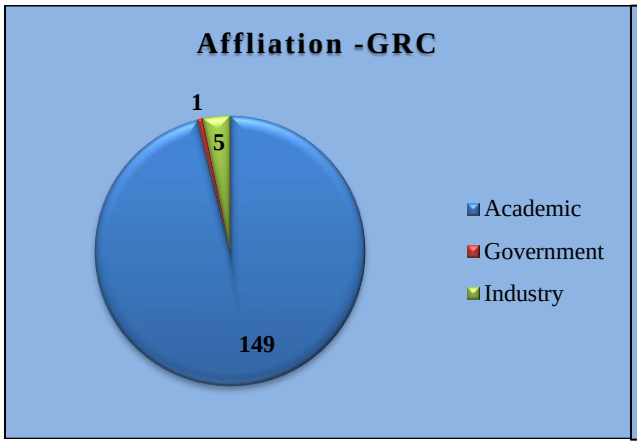
Grant Number W911NF-18-1-0105
June 16-22, 2018

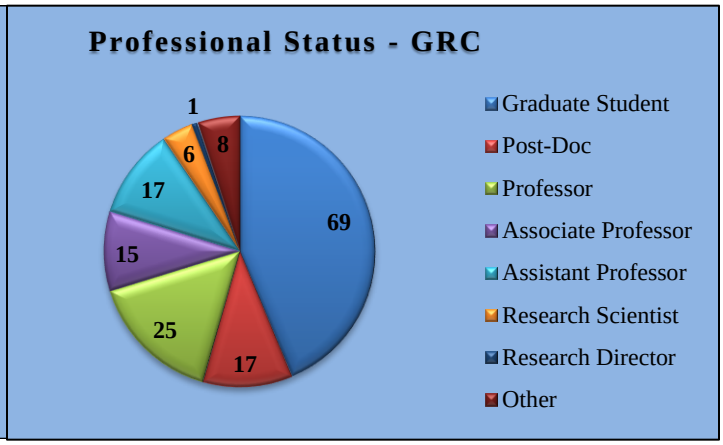
Operational Summary

The Gordon Research Conference (GRC) and Gordon Research Seminar (RS) on Noble Metal Nanoparticles were held at Mount Holyoke College in South Hadley, Massachusetts from June 16-22, 2018. The meeting covered a variety of scientific topics and the content presented was highly rated by participants.

Conference Participants

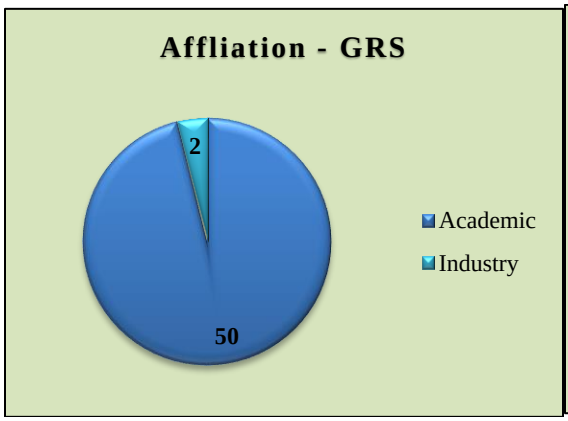
The Conference was well-attended with 158 participants. Scientists from academia represented 94% of the participants while attendees from government accounted for 1% and those from industry totaled 5%. The meeting also attracted a strong mix of young investigators and senior scientists. Students and post-docs accounted for 54% of all attendees. Approximately 36% of the participants at the 2018 meeting were women.

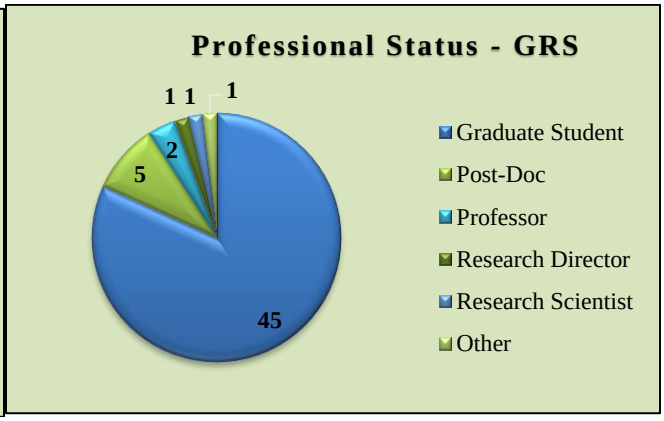




Seminar Participants

The Conference was well-attended with 55 participants. Scientists from academia represented 90% of the participants while attendees from government accounted for 0% and those from industry totaled 3%. Students and post docs combined accounted for 90% of all attendees. Approximately 36% of the participants at the 2018 seminar were women.





Conference Program

The 2018 Gordon Research Conference on Noble Metal Nanoparticles hosted the same invigorating level of cutting-edge science and technology that had made the previous four Noble Metal Nanoparticles conferences so successful. Speakers and Discussion Leaders were drawn from a complementary mix of experimentalists and theoreticians over a wide range of fields, including chemistry, physics, materials science, electrical engineering, and more. Oral presentations and poster sessions invoked lively discussions that cut across several disciplines and included participants from diverse backgrounds. Research topics featured the synthesis and assembly of metallic nanoparticles including hybrid and non-noble metal nanostructures that support collective excitations, the theoretical understanding of surface plasmons and their interactions with light, electrons, molecules, and other nanostructures, and applications that range from photocatalysis to nanomechanics and nanomedicine. At the conclusion of the Conference, selected poster presenters were invited to give short talks to showcase their work. Outside of planned events, attendees had many opportunities for informal gatherings in the afternoons and evenings to build networks and spur new research ideas. Young scientists were highly encouraged to participate in this Conference as well as the related Gordon Research Seminar (GRS) on Noble Metal Nanoparticles. As always, a great emphasis was placed on unpublished, novel, and exciting results. This was a vibrant and stimulating atmosphere for furthering new and impactful research for noble metal nanoparticles and other nanostructures including hybrid materials and assembled superstructures, which all have in common that they support the excitation of surface plasmon resonances.

Conference Budget

Funding provided by the Army Research Office supported partial travel for 4 professors, 3 associate professors and 2 assistant professors at the GRC and partial travel for 2 professors, 1 research director, 1 research scientist and 1 editor at the GRS.

Conference Feedback

Participants had an opportunity to provide feedback at the end of the Conference. The feedback collected from the meeting was extremely positive. Evaluations included numerous positive remarks regarding poster sessions and diversity of topics. Evaluations from the GRS included positive comments regarding the poster sessions and career panel.

GRC would like to thank the Army Research Office for its continued support of the meetings. The contributions received have been critical to the success of the conferences and are having a measurable impact in advancing the frontiers of science worldwide.

Dr. Stephan Link GRC Chair
Rice University

Dr. Sara Skrabalak, GRC Co-Chair
Indiana University

Dr. James Brooks, GRS Chair
University of Minnesota

Dr. Dayne Swearer, GRS Co-Chair
Rice University

Dr. Nancy Ryan Gray
President and Chief Executive Officer
Gordon Research Conferences

Noble Metal Nanoparticles

Gordon Research Conference

From Fundamentals to Applications of Collective Excitations in Nanostructured Materials

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June 17 - 22, 2018

Chair Stephan Link

Vice Chair Sara E. Skrabalak

Conference Program

Sunday

2:00 pm - 9:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	Plasmons Supported by Non-Noble Metals Discussion Leader: **Matthew Sheldon** (Texas A&M University, USA)
7:40 pm - 8:20 pm	**Teri Odom** (Northwestern University, USA) "Making, Measuring, and Modeling of Non-Noble Metal Nanostructures"
8:20 pm - 8:35 pm	Discussion
8:35 pm - 9:15 pm	**Peter Nordlander** (Rice University, USA) "Plasmonicity of an Excitation: Distinguishing Plasmons from Excitons"
9:15 pm - 9:30 pm	Discussion

Monday

7:30 am - 8:30 am	Breakfast
8:30 am - 9:00 am	Group Photo
9:00 am - 12:30 pm	Hybrid Nanostructures Discussion Leader: **Anne Bentley** (Lewis & Clark College, USA)
9:00 am - 9:30 am	**Miguel Jose Yacaman** (University of Texas at San Antonio, USA) "Low Dose Electron Diffraction and Cryo Microscopy: New Tools for Determining Hybrid Plasmonic Nanostructures"
9:30 am - 9:45 am	Discussion
9:45 am - 10:15 am	**Dong Qin** (Georgia Institute of Technology, USA) "Probing the Heterogeneous Nucleation in Nanocrystal Growth with a Molecular Probe by SERS"
10:15 am - 10:30 am	Discussion
10:30 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Yugang Sun** (Temple University, USA) "Hot Carrier Generation in Quantum-Sized Noble Metal Nanoparticles"
11:30 am - 11:45 am	Discussion
11:45 am - 12:15 pm	**Jingyi Chen** (University of Arkansas, USA) "Cu-Based Hybrid Nanostructures: From Syntheses to Applications"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch

1:30 pm - 4:00 pm	Free Time
3:00 pm - 4:00 pm	Power Hour *The GRC Power Hour is an optional informal gathering open to all meeting participants. It is designed to help address the challenges women face in science and support the professional growth of women in our communities by providing an open forum for discussion and mentoring.* Organizer: **Sara Skrabalak** (Indiana University, USA)
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	The Impact of Shape on Noble Metal Nanoparticles Discussion Leader: **Amanda Haes** (University of Iowa, USA)
7:30 pm - 7:55 pm	**Mostafa El-Sayed** (Georgia Institute of Technology, USA) "Nanotechnology of Gold Nanorods Stops Cancer Cell Migration and Thus Stops Cancer from Killing People"
7:55 pm - 8:10 pm	Discussion
8:10 pm - 8:35 pm	**Cecilia Noguez** (Universidad Nacional Autónoma de México, Mexico) "High Multipolar Plasmonics and Radiative Heat Transfer"
8:35 pm - 8:50 pm	Discussion
8:50 pm - 9:15 pm	**Catherine Murphy** (University of Illinois at Urbana-Champaign, USA) "Latitude and Longitude: Interfacial Chemistry on Gold Nanorods"
9:15 pm - 9:30 pm	Discussion
Tuesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Hot Electron Chemistry Discussion Leader: **Terefe Habteyes** (University of New Mexico, USA)
9:00 am - 9:30 am	**Renee Frontiera** (University of Minnesota, USA) "Ultrafast SERS Probing Hot Electron-Driven Molecule-Plasmon Dynamics"
9:30 am - 9:45 am	Discussion
9:45 am - 10:15 am	**Sebastian Schluecker** (University of Duisburg-Essen, Germany) "Photorecycling and Hot Electrons for Driving Reduction Chemistry of Molecules on Silver Nanoparticles"
10:15 am - 10:30 am	Discussion
10:30 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Bin Ren** (Xiamen University, China) "Hot Electron Chemistry Probed by Tip- and Surface-Enhanced Raman Spectroscopy"
11:30 am - 11:45 am	Discussion
11:45 am - 12:15 pm	**Ning Fang** (Georgia State University, USA) "*In Situ* Single Molecule Imaging of Nanoscale Chemical Processes"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session

6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Nanoparticle Superstructures Discussion Leader: **Hui Wang** (University of South Carolina, USA)
7:30 pm - 7:55 pm	**Tim Liedl** (Ludwig Maximilian University of Munich, Germany) "Plasmonics Enabled by DNA Nanotechnology"
7:55 pm - 8:10 pm	Discussion
8:10 pm - 8:35 pm	**Qian Chen** (University of Illinois at Urbana-Champaign, USA) "Direct Imaging of Crystallization Kinetics and Interfacial Fluctuations of Nanoparticle Superlattices"
8:35 pm - 8:50 pm	Discussion
8:50 pm - 9:15 pm	**George Schatz** (Northwestern University, USA) "Manipulating Plasmons Using Nanoparticle Arrays"
9:15 pm - 9:30 pm	Discussion
Wednesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Nanomedicine: Detection and Treatment Discussion Leader: **Denis Boudreau** (Laval University, Canada)
9:00 am - 9:30 am	**Rizia Bardhan** (Vanderbilt University, USA) "Screening Multiple Immunomarkers *In Vivo* with Multimodal Nanoantennas"
9:30 am - 9:45 am	Discussion
9:45 am - 10:15 am	**Laura Sagle** (University of Cincinnati, USA) "Liposome-Based SERS Substrates for Nonperturbative Biophysical Studies"
10:15 am - 10:30 am	Discussion
10:30 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Francesco Stellacci** (École Polytechnique Fédérale de Lausanne, Switzerland) "Gold Nanoparticles as the Ultimate Antivirals"
11:30 am - 11:45 am	Discussion
11:45 am - 12:15 pm	**Michael Natan** (Ultivue Inc., USA) "Multiplexed Immunohistochemistry in Tissue Biopsy Sections: Can SERS Ever Outperform Fluorescence?"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:00 pm - 7:30 pm	Business Meeting *Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair*
7:30 pm - 9:30 pm	Mechanics of Noble Metal Nanoparticles Discussion Leader: **Gregory Hartland** (University of Notre Dame, USA)
7:30 pm - 7:55 pm	**Fabrice Vallee** (CNRS / Universite Claude Bernard Lyon 1, France) "Mechanical Response of Noble Metal Nanoparticles: From Macro- to Nano-Size Oscillators"

7:55 pm - 8:10 pm	Discussion
8:10 pm - 8:35 pm	**John Sader** (The University of Melbourne, Australia) "Fluid-Structure Interaction of Metal Nanoparticles"
8:35 pm - 8:50 pm	Discussion
8:50 pm - 9:15 pm	**Michel Orrit** (Leiden University, The Netherlands) "Dynamics of Vapor Nanobubbles Around Laser Heated Gold Nanoparticles"
9:15 pm - 9:30 pm	Discussion
Thursday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Strong Coupling to Particles, Molecules, Photons, and Electrons Discussion Leader: **Katherine Willets** (Temple University, USA)
9:00 am - 9:30 am	**Gilad Haran** (Weizmann Institute of Science, Israel) "Strong Coupling in a Plasmonic Cavity at the Single Quantum Emitter Limit"
9:30 am - 9:45 am	Discussion
9:45 am - 10:15 am	**Hiroaki Misawa** (Hokkaido University, Japan) "Water Splitting Using Strong Coupling Between Localized Surface Plasmon and Cavity Modes"
10:15 am - 10:30 am	Discussion
10:30 am - 11:00 am	Coffee Break
11:00 am - 11:30 am	**Jon Camden** (University of Notre Dame, USA) "Probing Plasmons with Electrons and New Strategies for Surface Enhanced Spectroscopy"
11:30 am - 11:45 am	Discussion
11:45 am - 12:15 pm	**Jeremy Baumberg** (University of Cambridge, United Kingdom) "Extreme Nano-Optics: Seeing Single Atoms and Molecules"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Selected Poster Presentations Discussion Leader: **Sara Skrabalak** (Indiana University, USA)
7:30 pm - 7:40 pm	**Nicki Hogan** (Texas A&M University, USA) "Plasmonic Selective Absorbers for All-Metal Optical Power Generation"
7:40 pm - 7:45 pm	Discussion
7:45 pm - 7:55 pm	**Melissa King** (Wesleyan University, USA) "Iodide Assisted Underpotential Deposition of Copper at the Surface of High-Index Faceted Palladium Nanoparticles"
7:55 pm - 8:00 pm	Discussion
8:00 pm - 8:10 pm	**Jacob Pettine** (University of Colorado Boulder, USA) "Ultrafast, Angle-Resolved Photoelectron Spectroscopy of Individual Plasmonic Nanoparticles"
8:10 pm - 8:15 pm	Discussion
8:15 pm - 8:25 pm	**Jacek Szczerbinski** (ETH Zurich, Switzerland)

	"Plasmon-Driven Photocatalysis Leads to the Same Products as X-Ray-Induced Surface Photochemistry"
8:25 pm - 8:30 pm	Discussion
8:30 pm - 9:10 pm	**Naomi Halas** (Rice University, USA) "Noble Metal Nanoparticles: New Frontiers"
9:10 pm - 9:30 pm	Discussion

Friday

7:30 am - 8:30 am	Breakfast
9:00 am	Departure

Contributors

Gordon Research Conferences
Frontiers of Science

Carl Storm Underrepresented Minority Fellowship Program

Carl Storm International Diversity Fellowship Program

Nanoscale Horizons
Editorial Board Chair
Harold Craighead

Nanoscale
Editor-in-chief
Chunli Bai
IMPACT FACTOR 7.367*

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CHEMISTRY OF NANOMATERIALS FOR ENERGY, BIOLOGY AND MORE

Particle
& Particle Systems Characterization

Noble Metal Nanoparticles (2018) – Registration List

Name	Organization	Participation
Abreu, Endora	University of Utah	Poster Presenter
Ahn, Jae Wan	Georgia Institute of Technology	Poster Presenter
Anthony, Taryn P	Temple University	Poster Presenter
Asselin, Jeremie	University of British Columbia	Poster Presenter
Bardhan, Rizia	Vanderbilt University	Speaker
Baumberg, Jeremy J	University of Cambridge	Speaker
Beane, Gary A	University of Notre Dame	Poster Presenter
Bellido Sosa, Edson P	McMaster University	Poster Presenter
Bentley, Anne	Lewis & Clark College	Discussion Leader
Bhattacharya, Chirasmita	Indian Institute of Science, Bangalore	Poster Presenter
Bicket, Isobel C	McMaster University	Poster Presenter
Botequim, David J.	Instituto Superior Técnico, University of Lisbon	Poster Presenter
Boudreau, Denis	Laval University	Discussion Leader
Brooks, James L	University of Minnesota	Poster Presenter
Cai, Yi-Yu	Rice University	Poster Presenter
Camden, Jon P	University of Notre Dame	Speaker
Chakraborty, Amrita	Indian Institute of Technology Madras	Poster Presenter
Chakraborty, Papri	Indian Institute of Technology Madras	Poster Presenter
Chen, Qian	University of Illinois at Urbana-Champaign	Speaker
Chen, Jingyi	University of Arkansas	Speaker
Chen, Alexander N	Indiana University	Poster Presenter
Choo, Priscilla	Northwestern University	Poster Presenter
Clark, Benjamin	Rice University	Poster Presenter
Cobley, Claire M	Wiley-VCH	Attendee
Coughlin, Benjamin P	Tufts University	Poster Presenter
Crawford, Scott E	University of Pittsburgh	Poster Presenter
Cui, Jian	ETH Zurich	Attendee
De waele, Vincent	CNRS	Poster Presenter
Del Fatti, Natalia	Université Lyon 1, CNRS, Université de Lyon	Attendee
Devkota, Tuphan	University of Notre Dame	Poster Presenter
Diemler, Nathan	University of Pittsburgh	Poster Presenter
Doblas Jimenez, David	INM - Leibniz Institute for New Materials	Poster Presenter
Dominguez-Medina, Sergio	Commissariat à l'énergie atomique et aux énergies alternatives	Poster Presenter
El-Sayed, Mostafa A	Georgia Institute of Technology	Speaker
Engel, Sabrina	Westfälische Wilhelms-Universität Münster	Poster Presenter
Fang, Ning	Georgia State University	Speaker
Farshad, Mohsen	University of Maine	Poster Presenter
Filbrun, Seth L	Georgia State University	Poster Presenter
Fitzkee, Nicholas C	Mississippi State University	Poster Presenter
Flatebo, Charlotte	Rice University	Poster Presenter
Fontaine, Nicolas	Université Laval, Centre d'optique photonique et laser	Poster Presenter
Frontiera, Renee R	University of Minnesota	Speaker
Gamler, Jocelyn T.L.	Indiana University	Poster Presenter
Ghosh, Debasmita	Indian Institute of Technology Madras	Poster Presenter
Goldwyn, Harrison J	University of Washington	Poster Presenter

Habteyes, Terefe G	University of New Mexico	Discussion Leader
Haes, Amanda J	University of Iowa	Discussion Leader
Halas, Naomi J	Rice University	Speaker
Hallenbeck, Zachary T	Rensselaer Polytechnic Institute	Poster Presenter
Haran, Gilad	Weizmann Institute of Science	Speaker
Hartland, Gregory V	University of Notre Dame	Discussion Leader
He, Jie	University of Connecticut	Poster Presenter
Heiderscheit, Thomas S	Link Lab, Rice University Department of Chemistry	Poster Presenter
Henderson, Luke A	Rice University	Poster Presenter
Hogan, Nicki L	Texas A&M University	Speaker
Hosseini Jebeli, Seyyed Ali	Rice university	Poster Presenter
Hull, Olivia A	Kansas State University	Poster Presenter
Jayathilake, Himali D	Mount Holyoke College	Poster Presenter
Johnson, Joseph T	The University of Melbourne	Attendee
Johnston, Kathryn A	University of Pittsburgh	Poster Presenter
Jones, Matthew R	Rice University	Poster Presenter
Jose Yacaman, Miguel	University of Texas at San Antonio	Speaker
Kafle, Bijesh	University of New Mexico	Poster Presenter
Khatun, Esma	IITMadras	Poster Presenter
Kimmitt, Nathan F	Rensselaer Polytech Inst	Poster Presenter
King, Melissa E	Wesleyan University	Speaker
Kinnear, Calum	The University of Melbourne	Poster Presenter
Konda, Sai	American Chemical Society	Attendee
Kuda Singappulige, Gowri U	Kansas State University	Poster Presenter
Lagos, Maureen Joel	McMaster University	Poster Presenter
Lal, Surbhi	Rice University	Attendee
Landes, Christy F	Rice University	Poster Presenter
Large, Nicolas	University of Texas at San Antonio	Poster Presenter
Lear, Benjamin	Penn State	Poster Presenter
Lee, Stephen A	University of Michigan	Poster Presenter
Li, Shuzhou	Nanyang Technological University	Poster Presenter
Liedl, Tim	Ludwig Maximilian University of Munich	Speaker
Link, Stephan	Rice University	Chair
Liu, Guoliang (Greg)	Virginia Tech	Poster Presenter
Liu, Kun	Jilin University	Poster Presenter
Liu, Tingting	Northwestern University	Poster Presenter
Luo, Yi	University of Connecticut	Poster Presenter
Luo, Zheyu	Georgia Institute of Technology	Poster Presenter
Macfarlane, Robert J	MIT	Poster Presenter
Maiti, Arpan	University of Notre Dame	Poster Presenter
Mao, Ziliang	University of California, Merced	Poster Presenter
Marro, Nicolas	University of St Andrews	Poster Presenter
Martin, Matthew N	Khalifa University	Poster Presenter
Masiello, David J	University of Washington	Poster Presenter
McAlduff, Michael J	Sona Nanotech	Attendee
Misawa, Hiroaki	Hokkaido University	Speaker
Molina, Natalia Y	Temple University	Poster Presenter

Morishita, Kiyoshi	The University of Tokyo	Poster Presenter
Munro, Catherine J	University of Miami	Poster Presenter
Murphy, Catherine J	University of Illinois at Urbana-Champaign	Speaker
Natan, Michael J	Ultivue Inc.	Speaker
Noguez, Cecilia	Universidad Nacional Autónoma de México	Speaker
Nordlander, Peter	Rice University	Speaker
Odom, Teri W	Northwestern University	Speaker
Olafsson, Agust A	The University of Notre Dame	Poster Presenter
Olagunju, Mary O	University of Miami	Poster Presenter
Olson, Jacob	University of Notre Dame	Poster Presenter
Orrit, Michel	Leiden University	Speaker
Padmanabha Pillai, Pramod	Indian Institute of Science Education and Research Pune	Poster Presenter
Pal, Partha P	Pennsylvania State University	Poster Presenter
Paulo, Pedro M. R.	Instituto Superior Técnico, Universidade de Lisboa	Attendee
Pavliuk, Mariia	Uppsala University	Poster Presenter
Perera, Yasiru R	Mississippi State University	Poster Presenter
Personick, Michelle L	Wesleyan University	Poster Presenter
Pettine, Jacob	University of Colorado Boulder	Speaker
Picard-Lafond, Audrey	Université Laval	Poster Presenter
Pinaud, Fabien	University of Southern California	Poster Presenter
Piotti, Marcelo	STA Technologies Inc.	Attendee
Qin, Dong	Georgia Institute of Technology	Speaker
R. Daniel, Josee	Université Laval	Poster Presenter
Rafiei Miandashti, Ali	Ohio University	Poster Presenter
Ren, Bin	Xiamen University	Speaker
Renard, David	Rice University	Poster Presenter
Rice, Gordon	STA Technologies	Attendee
Ringe, Emilie	Rice University	Poster Presenter
Ritcey, Anna M	Laval University	Poster Presenter
Rossi, Tuomas	Chalmers University of Technology	Poster Presenter
Roy, Soumendu	Indian Institute of Science Education and Research, Pune	Poster Presenter
S, Sugi K	Indian Institute of Technology Madras	Poster Presenter
Sader, John E	The University of Melbourne	Speaker
Sagle, Laura B.	University of Cincinnati	Speaker
Sardar, Rajesh	Indiana University Purdue University Indianapolis	Poster Presenter
Schatz, George C	Northwestern University	Speaker
Schluecker, Sebastian	University of Duisburg-Essen	Speaker
Seibt, Susanne	University of Melbourne	Poster Presenter
Sheldon, Matthew T	Texas A&M University	Discussion Leader
Sherman, Lindy M	University of Notre Dame	Poster Presenter
Shi, Shi	Georgia Institute of Technology	Poster Presenter
Skrabalak, Sara E	Indiana University	Vice Chair
Stellacci, Francesco	École Polytechnique Fédérale de Lausanne	Speaker
Sun, Yugang	Temple University	Speaker
Sundaresan, Vignesh	Temple University	Poster Presenter
Swearer, Dayne F	Rice University	Poster Presenter
Szczerbinski, Jacek	ETH Zurich	Speaker

Tauzin, Lawrence J	Rice University	Poster Presenter
Tesema, Tefera Entele	University of New Mexico	Poster Presenter
Thompson, Lucas B	Gettysburg College	Poster Presenter
Tian, Shu	Rice University	Poster Presenter
Tsoulos, Theodoros V.	Rutgers University	Poster Presenter
Vallee, Fabrice	CNRS / Universite Claude Bernard Lyon 1	Speaker
Vartanian, Ariane	Nature Communications	Attendee
Visaveliya, Nikunjkumar R	The City College of New York	Poster Presenter
Wang, Hui	University of South Carolina	Discussion Leader
Waszkielewicz, Magdalena A	Wroclaw University of Technology	Poster Presenter
Willets, Katherine A	Temple University	Discussion Leader
Wu, Yiren	Georgia Institute of Technology	Poster Presenter
Wu, Yueying	University of Notre Dame	Poster Presenter
Wu, Shengxiang	Texas A&M	Poster Presenter
Zhang, Luo	Georgia Institute of Technology	Poster Presenter
Zhang, Qingfeng	Rice University	Poster Presenter
Zhang, Mingliang	University of Pennsylvania	Poster Presenter
Zhao, Jing	University of Connecticut	Poster Presenter
Zuo, Tiancheng	University of Michigan	Poster Presenter

Noble Metal Nanoparticles (GRS)

Gordon Research Seminar

From Fundamentals to Applications of Collective Excitations in Nanostructured Materials

June 16 - 17, 2018

Chairs James L. Brooks and Dayne F. Swearer

Conference Program

Saturday

2:00 pm - 5:00 pm	Arrival and Check-in
3:30 pm - 3:45 pm	Introductory Comments by GRC Site Staff / Welcome from the GRS Chair
3:45 pm - 4:30 pm	Keynote Session: Current and Future Trends Discussion Leader: **Dayne Swearer** (Rice University, USA)
3:45 pm - 4:15 pm	**George Schatz** (Northwestern University, USA) "Nanoparticle Plasmonics: An Introduction"
4:15 pm - 4:30 pm	Discussion
4:30 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Nanomaterial Synthesis and Optimization Discussion Leaders: **Jocelyn Gamler** (Indiana University, USA) and **Aaron Saunders** (nanoComposix, Inc., USA)
7:30 pm - 7:45 pm	**Benjamin Clark** (Rice University, USA) "Optimizing the Synthesis of Aluminum Nanocrystals from Alkyl Aluminum Precursors"
7:45 pm - 7:50 pm	Discussion
7:50 pm - 8:05 pm	**Kiyoshi Morishita** (The University of Tokyo, Japan) "Multifunctional Gold Nanoparticles for Protein Degradation"
8:05 pm - 8:10 pm	Discussion
8:10 pm - 8:25 pm	**Melissa King** (Wesleyan University, USA) "Iodide Assisted Underpotential Deposition of Copper at the Surface of High-Index Faceted Palladium Nanoparticles"
8:25 pm - 8:30 pm	Discussion
8:30 pm - 8:45 pm	**Papri Chakraborty** (Indian Institute of Technology Madras, India) "Fullerene Functionalized Atomically Precise Silver Clusters"
8:45 pm - 8:50 pm	Discussion
8:50 pm - 9:05 pm	**Theodoros Tsoulos** (Rutgers University, USA) "Few- and Long-Spiked Nanostars: The Role of Theory in the Optimization of Plasmonic Nanomaterials"
9:05 pm - 9:10 pm	Discussion
9:10 pm - 9:25 pm	**Kathryn Johnston** (University of Pittsburgh, USA) "Impacts of Broth Chemistry on Silver Ion Release, Surface Chemistry Composition and Bacterial Cytotoxicity of Silver Nanoparticles"
9:25 pm - 9:30 pm	Discussion

Sunday

7:30 am - 8:30 am	Breakfast
9:00 am - 11:00 am	Physical Insights into Noble Metal Nanoparticles Discussion Leaders: **Scott Crawford** (University of Pittsburgh, USA) and **Claire Cobley** (Wiley-VCH, Germany)
9:00 am - 9:15 am	**Gary Beane** (University of Notre Dame, USA) "Strong Exciton-Plasmon Coupling in Silver Nanowire Nanocavities"
9:15 am - 9:20 am	Discussion
9:20 am - 9:35 am	**Yi-Yu Cai** (Rice University, USA) "Photoluminescence of Gold Nanorods: Purcell Effect Enhanced Emission from Hot Carriers"
9:35 am - 9:40 am	Discussion
9:40 am - 9:55 am	**Stephen Lee** (University of Michigan, USA) "Single-Molecule Emission Spectrum Reshaping and All-Fluorescence Nanothermometry Using Gold Nanoparticles"
9:55 am - 10:00 am	Discussion
10:00 am - 10:15 am	**Natalia Molina** (Temple University, USA) "Super-Resolution Imaging of Electrochemical Reactions on Plasmonic Nanoparticle Electrodes"
10:15 am - 10:20 am	Discussion
10:20 am - 10:35 am	**Mariia Pavliuk** (Uppsala University, Sweden) "Nano-Hybrid Plasmonic Photocatalyst for Hydrogen Production at 20% Efficiency"
10:35 am - 10:40 am	Discussion
10:40 am - 10:55 am	**Jacek Szczerbinski** (ETH Zurich, Switzerland) "Plasmon-Driven Photocatalysis Leads to the Same Products as X-Ray-Induced Surface Photochemistry"
10:55 am - 11:00 am	Discussion
11:00 am - 12:30 pm	Poster Session *Coffee will be served in the poster area from 11:00 am - 11:30 am*
12:30 pm - 1:30 pm	Lunch
1:30 pm - 2:30 pm	Mentorship Component: Career Panel *This mentorship session will feature a career panel comprised of five successful scientists. Each mentor will be allowed to share their career path, and then the floor will be open for any questions from the GRS participants.* Discussion Leader: **James Brooks** (University of Minnesota, USA)
1:30 pm - 2:30 pm	**Panel Discussion** *Careers in Academia, Industry and Publishing* • **Claire Cobley** (Wiley-VCH, Germany) • **Corey Radloff** (3M Company, USA) • **Aaron Saunders** (nanoComposix, Inc., USA) • **Sara Skrabalak** (Indiana University, USA) • **George Schatz** (Northwestern University, USA)
2:30 pm - 3:00 pm	Evaluation Period *Fill in GRS Evaluation Forms*

3:00 pm Seminar Concludes

Contributors

STA Technologies Inc.

Noble Metal Nanoparticles (GRS) (2018) – Registration List

Name	Organization	Participation
Anthony, Taryn P	Temple University	Poster Presenter
Beane, Gary A	University of Notre Dame	Speaker
Bhattacharya, Chirasmita	Indian Institute of Science, Bangalore	Poster Presenter
Brooks, James L	University of Minnesota	Chair
Cai, Yi-Yu	Rice University	Speaker
Chakraborty, Amrita	Indian Institute of Technology Madras	Poster Presenter
Chakraborty, Papri	Indian Institute of Technology Madras	Speaker
Chen, Alexander N	Indiana University	Poster Presenter
Choo, Priscilla	Northwestern University	Poster Presenter
Clark, Benjamin	Rice University	Speaker
Cobley, Claire M	Wiley-VCH	Speaker
Coughlin, Benjamin P	Tufts University	Poster Presenter
Crawford, Scott E	University of Pittsburgh	Discussion Leader
Devkota, Tuphan	University of Notre Dame	Poster Presenter
Diemler, Nathan	University of Pittsburgh	Poster Presenter
Farshad, Mohsen	University of Maine	Poster Presenter
Fontaine, Nicolas	Université Laval, Centre d'optique photonique et laser	Poster Presenter
Gamler, Jocelyn T.L.	Indiana University	Discussion Leader
Hallenbeck, Zachary T	Rensselaer Polytechnic Institute	Poster Presenter
Henderson, Luke A	Rice University	Poster Presenter
Hoang, Phuong M	King Abdullah University of Science and Technology	Poster Presenter
Hosseini Jebeli, Seyyed Ali	Rice university	Poster Presenter
Johnston, Kathryn A	University of Pittsburgh	Speaker
Kimmitt, Nathan F	Rensselaer Polytech Inst	Poster Presenter
King, Melissa E	Wesleyan University	Speaker
Kinnear, Calum	The University of Melbourne	Poster Presenter
Lee, Stephen A	University of Michigan	Speaker
Liu, Tingting	Northwestern University	Poster Presenter
Maiti, Arpan	University of Notre Dame	Poster Presenter
Mao, Ziliang	University of California, Merced	Poster Presenter
Marro, Nicolas	University of St Andrews	Poster Presenter
Molina, Natalia Y	Temple University	Speaker
Morishita, Kiyoshi	The University of Tokyo	Speaker
Munro, Catherine J	University of Miami	Poster Presenter
Olafsson, Agust A	The University of Notre Dame	Poster Presenter
Olson, Jacob	University of Notre Dame	Poster Presenter
Pavliuk, Mariia	Uppsala University	Speaker
Pettine, Jacob	University of Colorado Boulder	Poster Presenter
Picard-Lafond, Audrey	Université Laval	Poster Presenter
Radloff, Corey J	3M Company	Speaker
Rafiei Miandashti, Ali	Ohio University	Poster Presenter
Renard, David	Rice University	Poster Presenter
Roy, Soumendu	Indian Institute of Science Education and Research, Pune	Poster Presenter
Saunders, Aaron	nanoComposix, Inc.	Speaker
Schatz, George C	Northwestern University	Speaker

Seibt, Susanne	University of Melbourne	Poster Presenter
Sherman, Lindy M	University of Notre Dame	Poster Presenter
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Zuo, Tiancheng	University of Michigan	Poster Presenter